

Appln. No. 09/837,503
Amdt. dated Apr. 12, 2004
Reply to Office action of Jan. 5, 2004

Amendments to the Specification:

Please amend the paragraph which begins at line 18 of page 5 as follows:

In accordance with the preferred embodiment of the present invention as shown in Figure 1 and Figure 2, a chamber 48 may be provided in the conduit for receiving the water fed from the water source 28. The chamber 48 may be packed with a high surface area material 50 which assists, with the water, in cooling the reformed gas stream to the desired temperature. Suitable high surface area materials include ceramic pellets, steel wool, reticulated ceramic foam, metallic foam and honeycomb monoliths. It is preferred that the water be injected into the gas stream through a nozzle 52 which atomizes the water into small droplets. The nozzle 52 may take the form of any nozzle known in the art and should be designed to provide water droplets of less than about 100 microns at rated flow conditions which are about 27 lbs./hr. of H₂O. In this way the water may be distributed in a substantially uniform manner onto the high surface area material 50 so as to increase cooling efficiency. It has been found that relatively small amounts of water are required to effectively cool the gas stream. In a PEM cell power plant, for example, to cool 250 pph(pounds per hour) of reformed gas from 660°F to 400°F, 27 pph of water at a temperature of 140°F is required. However, it should be noted that the key to this temperature control device is the water phase change in the form of evaporating and not the inlet water temperature. Water temperature for phosphoric acid cell power plant would more likely be in the 300°F range.